Developing an Environmental Management System at Concern Stirol in Ukraine

Project Title : The Development of an Environmental Management System and Preparation for Certification and Compliance with ISO 14001 Requirements at Concern Stirol
Leader: Concern Stirol, Donetsk Oblast, Ukraine
Partners: 1) Futurepast, Inc., Arlington, VA, USA; 2) Ukrainian Environmental Technology Center (UkrNTEC), Donetsk, Ukraine
Location: Donetsk Oblast, Ukraine
Project Duration: January 2000- February 2001
EcoLinks Project Investment: Total EcoLinks Project Investment: $106,221; EcoLinks Grant Support: $48,785; Project Team Cost Share Contribution: $57,436

Best Practice: Transferable Solution

This project is a Best Practice because Concern Stirol, a chemical manufacturing company in Ukraine, established itself as a model and an experienced guide and mentor in Environmental Management Systems (EMSs) and ISO 14000 series standards. The ISO 14000 series emphasizes an internationally established protocol and standard for controlling and monitoring harmful emissions and waste materials. With the support of an EcoLinks Challenge Grant, Concern Stirol used the EMS/ISO 14000 series to generate the framework and impetus for other companies throughout Ukraine to reduce the environmental impacts of industrial activity and increase their competitive stance in national and international markets.

Through this project, Concern Stirol becomes the first company to be certified in ISO 14001 procedures by a third party organization. Concern Stirol employees received expert training in environmental auditing to identify and control energy use,

emissions, and waste. With the implementation of the EMS established in this project, Concern Stirol reduced ammonium emissions by 233 metric tons per year and ammonium nitrate emissions by 96 metric tons per year. Companies incorporating the system outlined in this project gain economic benefits including improving their access to loans, increasing their competitiveness, and reducing operation costs through energy savings.

Project Summary

Ukraine is highly industrialized. The Donetsk region in eastern Ukraine has a disproportionately high share of industrial activity compared to the rest of the country. Companies are still in the early stages of preparing to meet national environmental policy objectives and internationally recognized environmental standards. In 1997 Ukraine adopted ISO 14001 as a national standard. The ISO 14000 series standardizes the field of environmental management systems and tools promoting consistent and effective organization and product evaluation (e.g., environmental auditing, environmental labeling, environmental performance evaluation, etc.). Prior to project implementation, Ukrainian companies had no experience preparing for third party ISO 14001 certification.

Concern Stirol, an open stockholding company founded in the 1930s, is one of the biggest manufacturers of ammonia, fertilizers, polystyrene, pharmaceutical products and building materials in Ukraine. It captures 80% of the external market for agricultural chemicals. While Concern Stirol has experience with environmental management programs, due to the scale of its operations (4,500 full-time employees and multiple large-scale production lines), it sought additional expertise on EMSs and ISO 14000 series standards.

With the support of an EcoLinks Challenge Grant, Concern Stirol teamed up with Futurepast, Inc. a US firm and UkrNTEC of Ukraine to establish an EMS that meets ISO 14001 standards. This project established the process by which Concern Stirol was able to design and implement an EMS qualifying it for ISO 14001 third party certification. Concern Stirol's final ISO 14001 third party certification was subsequently achieved.

To prepare for ISO 14001 certification, an initial assessment of environmental management practices at Concern Stirol was conducted and recommendations were provided. Additionally, employee trainings in EMS/ISO 14000 series standards with an emphasis on environmental auditing, on-site visits of model companies in the US, and a pre-registration audit were conducted. The notable outcomes of this project include initiation of the ISO 14001 third party certification process for companies in Ukraine, a reduction in harmful emissions with each new registrant, and improved competition and financial opportunities for companies in Ukraine. In the next sections, detailed descriptions of project activities, benefits, lessons learned, and project participant contact information are provided.

Project Activities

The following methods and materials were applied at Concern Stirol to develop an EMS in accordance with ISO 14001 standards and to prepare to achieve ISO 14001 third party certification. Other companies in Ukraine seeking to achieve similar results can replicate these methods.

1. Established Steering Committee for the EMS/ISO 14001 Implementation Project

Action: The EcoLinks project team met with the senior management at Concern Stirol to organize a steering committee to establish and implement an EMS according to ISO 14001 standards.

Product(s): 1) Organizational structure to implement ISO 14001.

2. Conducte d review of existing environmental protection system and developed recommendations for incorporating EMS ISO 14000 elements

Action: Stirol environmental specialists and UkrNTEC project team members conducted a review of the currently operating environmental protection system at Stirol. An analysis of existing documentation procedures was conducted. Existing environmental data bases created in accordance with existing national legislation were reviewed. Recommendations based on ISO 14001 standards were developed. Futurepast Inc. provided an introductory seminar on ISO 14001 standards for Stirol staff.

Product(s): 1) Audit Report (confidential) 2) Environmental parameters and ranking procedure 3) Methodology for data collection, storage, and treatment 4) Documentation templates (e.g., audit check-list) 5) Authorization procedure for documentation 6) Seminar on ISO 14001 for Concern Stirol staff.

3. Developed an ISO 14000 EMS data base concept

Action: A concept for an EMS data base system including r eference terms for software development was developed. Waste treatment documentation was of special concern. The data base is to include a list of emissions associated with hazardous chemicals, an inventory of release points, control equipment, and monitoring and test points, and a summary of economic information related to plant emissions. The target audience is to include specialists and managers in the industrial sector, parties interested in statistics compilation, and environmental inspectors.

Product(s): 1) Scheme of ISO 14000 EMS Data Base Concept and draft terms of reference for software development 2) Target audience identification.

4. Identified corrective actions and developed corrective actions working design

Action: Upon review of existing environmental protection activities at Concern Stirol, corrective actions were identified. A process for assessing corrective actions

was established. The working design emphasized 1) new technology for the compression of gaseous ammonia; 2) new membrane technology for air separation to decrease NH_3 emissions; and 3) new membrane technology for sewage water purification to decrease fresh river water intake and polluted water discharge.

Product(s): 1) Criteria for corrective actions assessment 2) Corrective actions working design.

5. Conducted internal auditor training course

Action: A three-day internal auditor Training Course, "Documenting an Environmental Management System," was conducted. Twenty-five participants attended and included the Concern Stirol EMS implementation team, staff members from UkrNTEC (project partner), top management staff from Stirol, and representatives from the Ecology Office. Participants learned how to create flowcharts, establish a structure for a documented management system, and write procedures and work instructions. The training also provided an overview of the EMS ISO 14001 requirements.

Product(s): Twenty-five trained internal auditors at Concern Stirol to ensure ISO 14001 compliance.

6. Toured US facilities to observe ISO 14001 implementation procedures

Action: A study tour of five facilities in the US to observe and experience the application of ISO 14001 standards was completed. The following facilities were visited: Nissan Motor Manufacturing Corporation in Smyrna, TN; Bridgestone/Firestone Inc. in Nashville, TN; Reichhold, Inc. in Bridgeville, PA; ChemFirst Fine Chemicals, Inc. in Tyrone, PA; and P.H. Glatfelter Company in Spring Grove, PA. A meeting was also convened with the Deputy Assistant Secretary for Pollution Prevention and Compliance Assistance from the Pennsylvania Department of Environmental Protection. ISO 14001 implementation procedures were observed and documentation procedures were shared.

Product(s): Comparative case examples of ISO 14001 implementation and documentation procedures.

7. Prepared for registration audit

Action: An internal audit team conducted a pre-registration audit of Concern Stirol's EMS to assess its conformity with ISO 14001 standards. Debriefing sessions were held.

Product(s): A complete audit report including nonconformance reports, an audit plan, and auditor working papers.

8. Finalized contract for registration and completed public information materials for distribution

Action: A registration audit was scheduled. Team members shared their experiences implementing the EMS.

Product(s): 1) Contract for registration audit appointment 2) 2000 copies of booklet, "Concern Stirol ISO 14001/EMS" for distribution at Concern facilities 3) 150 copies of booklet "Partnership program. ISO 14000: from problem to solution" for broad distribution 4) Paper presentation at American Society for Quality's ISO 14000 Conference to be held March 19-22 in Reno, Nevada

This methodology provides a step-by-step account of the methods and materials used to complete this project. The next section, "Project Benefits," outlines the measurable outcomes of applying this methodology.

Project Benefits

In addition to the environmental and economic benefits derived from applying an EMS/ISO 14001 standard, a most notable benefit from this project is capacity building. This project strengthens the capacity for Ukraine's industrial sector to design and implement effective EMSs by making Concern Stirol a model company in the third party ISO 14001 certification procedure. The application of this standard reduces harmful emissions, makes certified companies more competitive on the open market, and increases financial opportunities. A detailed outline of the capacity building benefits, environmental benefits, and economic benefits is provided below.

Capacity Building Benefits

Organizational capacity building is key in terms of designing and implementing an effective EMS program in accordance with ISO 14001. Given that Concern Stirol has 4,500 full-time employees, designing and implementing an effective EMS is a large task. This project provided capacity building elements necessary for EMS implementation at Concern Stirol and throughout Ukraine. Those elements are:

1) A training seminar in EMS/ISO 14000 series standards with an emphasis on environmental auditing. Twenty-five people, mostly Concern Stirol staff, were trained in environmental auditing.

2) In 1997 Ukraine adopted ISO 14001 as a national standard and Concern Stirol is expected to be the first organization in Ukraine to become registered by a third party organization as meeting the standard's requirements.

3) A registered EMS raises employee morale and demonstrates management commitment. Confident employees positively affect company operations and production.

4) Concern Stirol and Futurepast Inc. have established a relationship that is fostering future engagements and networks. For example, John Shideler of Futurepast Inc. has been invited by a Concern Stirol staff member to participate in a seminar in Kiev on ISO 14001.

Environmental Benefits

Implementing an EMS in accordance with ISO 14001 standards provides direct environmental benefits. Vital natural resources, especially non-renewable energy sources such as fossil fuels, are used more efficiently. Harmful emissions from the combustion of fossil fuels, ammonia, and ammonium nitrate are reduced.

With an EMS/ISO 14000 series program in place, both operations and mechanical aspects of production at Concern Stirol are more efficient. With improved efficiency, fewer raw, non-renewable resources (e.g., fossil fuels) are consumed. With more efficient use of combustibles, there are fewer greenhouse gases emissions that pollute ambient air and contribute to global warming.

The EMS/ISO 14000 series program at Concern Stirol controls harmful emissions by monitoring, documenting, and planning for further reductions. With the implementation of this program, ammonia emissions were reduced by 233 metric tons per year starting March 2001. Ammonium nitrate emissions were lowered by 96 metric tons per year. Ammonia concentration within the company area is the lowest in twenty years.

Economic Benefits

The primary economic benefit from ISO 14001 certification is increased competitiveness on the international market. As most of Concern Stirol's goods are sold to the European market, ISO 14001 certification helps it to maintain its competitive position with European buyers. ISO 14001 certification helps companies to build a positive public image both at home and abroad.

In addition to market competitiveness, there are multiple savings from implementing an EMS that promotes energy efficiency and sound waste management practices and meets national and international environmental standards. These include savings from reduced energy consumption and waste management. Concern Stirol can also expect reduced environmental fees resulting from significant reductions in ammonia emissions.

Lessons Learned

Several lessons were learned during the implementation of this project. These lessons provide other companies with practical knowledge on EMS/ISO 14001 third party certification in Ukraine.

- ISO 14001 is a useful EMS standard for companies in the former Soviet Union. Only a few companies in Ukraine and neighboring Russia, however, have embraced ISO 14001 to date, but interest in ISO 14001 in the region is growing.

- Support and interest in ISO 14000 series standards by company top managers is critical to the successful implementation of an EMS that meets these standards.

- Concern Stirol is a large-scale operation. The time and effort to initiate and implement an EMS and work towards ISO 14001 certification exceeded the EcoLinks Grant parameters. Additional support would have facilitated these efforts given the scale of the project.

- Intensive EMS training accompanied by visits to US companies applying ISO 14001 standards provided a sound theoretical and practical understanding of applying EMS ISO 14001 standards. On-site visits to US companies currently applying ISO 14001 standards provided practical knowledge that could be used to implement ISO 14001 in Ukraine.

- To develop an EMS documentation system, company specialists should be relieved of other duties and assigned only to the initiation and implementation of the EMS. The number of specialists should furthermore correspond to the scope of the EMS.

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